AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Amend the paragraph [0005] beginning on page 2, line 7 as follows:

[0005] The invention thus concerns to assist a patient respiration by delivering air to a patient ~~trough~~ through a mask, said mask being designed to be connected on one first extremity of a tube, said apparatus comprising :

Amend the paragraph [0011] beginning on page 2, line 32 as follows:

[0011] A further implementation of the apparatus according to the invention is that the pressure control unit comprises an estimation module connected to the means for detecting the patient's breathing parameters, in order that the estimation module is able to determine when the patient is inspiring or expiring and in response the pressure to apply to the patient's mask, so that the control unit ~~adjust~~ adjusts the pressure delivered by the blower.

Amend the paragraph [0012] beginning on page 3, line 4 as follows:

[0012] Further implementations enable ~~to modulate~~ modulating the pressure of the provided air in response to the patient's breathing parameters and events which occur in the patient's breathing.

Amend the paragraph [0019] beginning on page 3, line 23 as follows:

[0019] FIG. 6 represents the way the apparatus reacts to events occurring in patient's breathing, FIG. 6(b) represents the auto-adjustment of Example 2, [[and]]

Amend the paragraph [0020] beginning on page 3, line 25 as follows:

[0020] FIG. 7 represents how the apparatus operates to detect the presence of a patient at the mask [[.]] , and

Insert the following between paragraph [0020] and the "DETAILED DESCRIPTION OF THE INVENTION" heading:

FIG. 8 represents the relationship between Frequency Shift Keying (FSK) modulator and the voltage controlled current source.

Amend the paragraph [0021] beginning on page 3, line 29 as follows:

[0021] Ordinary tubes used in an air assisting apparatus usually comprise a pressure sensing tube to measure the pressure at the end of the tube. The apparatus according to the present invention is based on this characteristic. As represented on FIG. 1, the apparatus 1 is connected to the tube 20 by the air inlet and connected to the pressure sensing tube of the tube. The pressure sensing tube is connected to a first pressure sensor 6 comprised in the apparatus. If no sensing tube is comprised, a mean will be connected at a first pressure sensor of the apparatus.

Because the tube 20 diameter value is much smaller than the tube 20 length value, the pressure drop in the tube is defined by the following equation:

Amend the paragraph [0035] beginning on page 5, line 9 as follows:

[0035] When using a new tube, the calibration process is entered, notably at the request of a clinician or a qualified user. The apparatus is expecting the ~~calibration~~ calibrating shell to be hooked as described in FIG. 1. The flowchart represented in FIG. 2 is showing an example of a series of measurements resulting [[on]] in the K_T coefficient calculation, then the tube coefficient K_T is recorded and all the upcoming sessions will be based on this new tube coefficient. When the tube 20 and the calibrating shell 10 are installed, the value J corresponding to the number of one measure is set equal to 1 and associated to a number I corresponding to the value of the pressure provided by the blower 4, this I number being for example equal to 4 hPa when the calibration starts. Then the Pulse Width Modulation (PWM) 31 voltage is applied in order to deliver the pressure PM sensed at the calibrated termination which is the calibrating shell 10. The pressure PM and the pressure PB are measured and associated to the J number corresponding to the measure. If J does not ~~equals~~ equal the number of measures N required to calculate the K_T average, the next measure is taken which means that J is incremented [[of]] by 1. The next measure is preferentially made for a pressure incremented of 2 hPa, which means that I is incremented [[of]] by two. When the number of measures required N is reached, the data associated to each measure are computed and enable to associate a tube coefficient K_T value to each corresponding measure J. This enables ~~to calculate~~ calculating of an average of the K_T

value. For example if eight measures are required, J and I will be incremented 7 times before calculating the tube coefficient k value. This also enables ~~to reject~~ rejecting the tube if its standard does not correspond to the kind of tube which can be used with the apparatus 1. The K_T value will then be used for the airflow computation. When at least one filter 22 is placed at a first extremity 13 of tube, the control unit 2 is able to calculate the airflow at the second extremity 14 of the tube from the measured pressures PM and PB and from the airflow resistance coefficient K_T of said tube and from the airflow resistance coefficient KF of said filter.

Amend the paragraph [0036] beginning on page 6, line 5 as follows:

[0036] The apparatus ~~according to any of the previous claims~~ as described above, wherein the control unit comprises offset compensation means for compensating the possible difference of gauging between the two ~~pressure~~ pressures.

Amend the paragraph [0038] beginning on page 6, line 12 as follows:

[0038] Low flows accuracy is important in an air delivery apparatus ~~specially~~ especially when triggering between inspiration and expiration where sensitivities as low as 5 l/mn are required.

Amend the paragraph [0045] beginning on page 6, line 33 as follows:

[0045] ***Voffset*** being the constant that can change drastically from one sensor to another within the same lot and that drifts slowly due to aging.

Amend the paragraph [0045] beginning on page 7, line 14 as follows:

[0054] By offset it is [[mean]] meant that the constant which corresponds to the difference between the pressure measured by one sensor and the absolute value of pressure.

Amend the paragraph [0055] beginning on page 7, line 17 as follows:

[0055] The invention takes advantages of a well [[know]] known state of the apparatus when no patient is connected to the apparatus, and no pressure is generated by the blower. During this state The PM and PB values have the same value [[than]] as the ambient pressure. The control unit 2 comprises offset compensation means for compensating the possible difference of gauging between the two pressure sensors 6 and 8.

Amend the paragraph [0060] beginning on page 7, line 24 as follows:

[0060] Preferentially the apparatus comprises an analog amplifier 36 connected to said analog ~~subtractor~~ subtractors 34 and 38 in order to amplify the signal corresponding to said D result and to send it to the microprocessor 30, thus enabling the microprocessor to have an accurate adjustment of said value C until the result D reaches the value zero.

Amend the paragraph [0061] beginning on page 8, line 16 as follows:

[0061] The apparatus can also comprise analog to digital converters 42, 44 and 40 connected between the microprocessor [[3)]] 30 and the said first pressure sensor, between the

microprocessor and the said second pressure sensor, and between the microprocessor and the said analog amplifier, so that the microprocessor is provided with only digital data.

Amend the paragraph [0062] beginning on page 7, line 22 as follows:

[0062] With a non standard calibration tube, the process for calibrating a tube used in the apparatus to assist patient's respiration, ~~comprising~~ comprises:

Amend the paragraph [0063] beginning on page 7, line 25 as follows:

[0063] connecting a ~~first tube's 20~~ first extremity 13 of said tube 20 to the blower of an apparatus ~~according to any of claim 1 to 5~~,

Amend the paragraph [0066] beginning on page 7, line 33 as follows:

[0066] switching the blower on, and instructing said control unit 2 to ~~measured~~ measure the pressures on both said first and second pressure sensors,

Amend the paragraph [0068] beginning on page 8, line 5 as follows:

[0068] The apparatus can also comprise a Frequency Shift Keying (FSK) modulator which transforms the binary data [[send]] sent by the apparatus sensors or elements in a modulation of the frequency of the tension applied on a voltage controlled current source, connected to the external power supply, so that the voltage controlled current source transmit the modulation corresponding to the data, a FSK demodulator converting the voltage frequency

modulation into binary data and transmit to the elements, so that each sensor or module connected to the power source is able to receive or transmit information.

Amend the paragraph [0069] beginning on page 9, line 15 as follows:

[0069] The apparatus can also be used in a set for calibrating a tube used in apparatus to assist patient's respiration comprising the apparatus according to present invention and a calibrating shell [[(10)]] 10 with a traversing hole [[(12)]] 12 having a known airflow resistance coefficient [[K_s]] K_S.

Amend the paragraph [0070] beginning on page 9, line 21 as follows:

[0070] The apparatus enables ~~to modulate~~ modulation of the pressure to the patient in respect to the illness to treat. Due to the airflow computation, the apparatus has the capacity to differentiate the two basic states of the respiration: inspiration and expiration. The control unit comprises a nonvolatile memory 120 in which the control unit stores, as two values, the pressures measured at each pressure sensor. The sensors provided in the apparatus enables the pressure control unit to control the pressure of the air delivered. The outputs of the [[E]] Estimator are the value of the inspiration pressure PI which is the pressure maintained at the patient's mask 15 during the inspiration, and the value of the expiration pressure PE which is the pressure maintained at the patient's mask 15 during the expiration. The data of the pressures PM 112 and PB 114 which are sensed at the extremities of the tube and the data 116 of the tube coefficient K_T enable the airflow computation. This computation 130 enables the computation of

the inspiration and expiration, this latest computation enables the estimation module 100 to determinate, which step of the patient's breathing is occurring. A breath estimation step is qualifying a breath in shape, energy (volume) and frequency. The clinician or a qualified user enters parameters of the delivered pressures for the expiration phase and the inspiration phase. The clinician ~~enters~~ also enters parameters defining how the estimation module 100 is going to react following events detected in the breath estimator 132. It is well known that a feedback of the patient with his treatment is helping compliance, thus the patient can have an access to a parameter ranging from min to max that is qualified to be "comfort vs. efficiency". This patient setting is having the weight that the clinician is giving to it, from pure placebo effect to some level of effects. Basically the patient settings 122 are applied in the normal breath situation or/and have a limited action on the pressure regulation. It is also possible that the airflow is an input to the estimation module 100. Thus, with the data inputs concerning the breath estimation (and clinical symptoms or event associated with), the inspiration/expiration computation and the clinical settings, and possibly the airflow computation and patient settings, the control unit 2 by the estimation module 100 is able to determinate the pressures required PI and PE. Those two values can be addressed to two different outputs 102 and 104 where a switch is able, relative to the inspiration/expiration computation, to connect to the required output regarding if the patient is breathing in or out. The control unit 2 comprises a pressure control loop 106 which, by comparing the pressure measured in the mask 15 and the value of pressure required PI or PE, is able to adjust the Pulse Width Modulation tension PWM in order to obtain the correct pressure in the mask 15. The FIG. 6 represents one pattern of the pressure of treatment provided according to

the airflow due to the patient breathing. In this example, the clinical technician has set a special modulation of pressures Pi and Pe during respectively the inspiration and the expiration; after a while as no special event occurs the values of the two pressures are changed.

Amend the paragraph [0071] beginning on page 11, line 5 as follows:

[0071] The apparatus has a two steps strong recognition process in order to prevent false start of the apparatus when the mask 15 is not on the patient's face and to prevent starting a new treatment session. When the apparatus is started by the patient by using the keyboard, for example and as represented in FIG. 7 by using the start key, the blower 33 is kept turning at a very low speed, waiting for some activity on the mask pressure sensors 6. When an activity is detected, the apparatus is instantaneously trying to bring the pressure at the apparatus outlet at a minimum starting pressure SP of 4 hPa. When this pressure is reached the apparatus tries to identify at least one breath to start the process according to the settings. When the mask 15 is not applied against something, like a hand or the patient's face, no activity is detected. Then if a maximum time since the apparatus start has been ~~spend~~ spent (the timeout is reached), [[then]] the blower is stopped. On the contrary, the apparatus keeps on waiting for an activity on the pressure sensors. When the mask 15 is not applied correctly the pressure can not reach 4 hPa. Then if the timeout is reached the blower is stopped, on the contrary the apparatus waits to detect some activity on the pressure sensors. When the mask 15 is not applied on the patient's face no breath pattern is recognized. Then the blower is stopped if the timeout is reached. On the contrary the apparatus waits to detect some activity on the pressure sensors. The timeout checking

prevents the blower keeping turning on if the ~~patients~~ patient does not start the treatment and ~~forget~~ forgets to start the blower. A further advantage of this implementation is that if a patient is connected, bringing the pressure instantaneously to 4 hPa will prevent CO_2 rebreathing.

Amend the paragraph [0073] beginning on page 12, line 8 as follows:

[0073] In a preferential embodiment the average pressure of treatment on one breathing step is not constant in time and will be ~~modulate~~ modulated by the estimation module 100 according to the events occurring, such as snoring or apneas.

Amend the paragraph [0075] beginning on page 12, line 17 as follows:

[0075] As represented on FIG. 6 when no events are detected the average pressure of treatment value will follow the equation:

$PT(t)=MAX(PT(t-\varepsilon)-(NOEK \times \varepsilon), PT\ min)$

ε being the sampling time, the MAX function is returning the greatest value of its two members. The average pressure value [[PM]] AVP, corresponding to the pressure of treatment PT on one breath thus decrease linearly until it reaches the minimum set by the clinician and stays constant until an event occurs. The average pressure is ~~change~~ changed each sampling time which correspond to one single breath (one inspiration and one consecutive expiration).

Amend the paragraph [0078] beginning on page 13, line 1 as follows:

[0078] Step 2: If so the estimation module looking in clinical settings, will define a persistence delay D_P. In the example of FIG. 6, a snore is detected at t_{16}, the persistence delay DP $= t_{17} - t_{16}$ could be set to 2 minutes.